APPENDIX G

DUW 80036389
BVL

CONSULTANT SCOPE OF WORK FOR DUWAMISH GROUNDWATER STUDIES

Metro is continuing its efforts to identify potential non-point sources of toxicants to the Duwamish through site visits to industrial facilities, storm drain monitoring and reviewing all current water quality data from the Duwamish. These programs will address the contributions of stormwater, fugitive dust and accidental spills, however the role of groundwater in the pollution problems of the lower Duwamish is poorly understood. Large percentages of the loadings of toxicants cannot be attributed to known sources. Groundwater discharges from current or historical sources may contribute heavy metals and organic toxicants to the river. Limited information is available from a few sites, but a comprehensive understanding of groundwater quality, quantity and dynamics is lacking.

Metro is specifically interested in the impact of groundwater on the Duwamish River from the mouth of the Black River (River mile 11.0) to the mouth of the East and West Waterway.

To our knowledge, at least eight groundwater studies at specific locations have been undertaken in the area. ChemPro analyzed organic solvents migrating from its facility. Boeing and Isaacson Steel investigated possible sources of arsenic in groundwater near the old Slip 5. Several tank farms (Chevron, Arco and Shell) studied groundwater contamination from petroleum

DUW 80036390
BVL

product spills on their facilities. The RSR lead smelter on Harbor Island discharged its wastewater to a sand bottom lagoon. At least one monitoring well has been dug on site. Groundwater studies were undertaken as part of the preliminary engineering for the West Seattle bridge. As part of the predesign for Metro's Renton effluent transfer system pipeline, groundwater along the west bank of the Duwamish will be studied. Undoubtedly, there are additional groundwater investigations in the area as part of EPA RCRA studies and other monitoring efforts; however these individual studies have never been synthesized into a comprehensive analysis of groundwater in the lower Duwamish.

Large gaps exist in information regarding quality, quantity, and dynamics of groundwater in the Duwamish and its relative contribution to the loadings to the river. Metro is seeking a consultant to develop a thorough groundwater strategy for the Duwamish. Historical information regarding industrial practices in the area will be reviewed, existing monitoring information will be analzyed and recommendations for well placement, depth, parametric coverage and an estimated budget for the monitoring program will be developed.

Consultant Tasks

1. Review historical information on waste disposal practices in the lower Duwamish. EPA has aerial photographs of the area since the 1940s and has identified locations with possible problems.

As part of its Duwamish Industrial Non-Point Source Investigations, Metro has reviewed historical information on industrial practices and possible areas of groundwater contamination. Other information on location of potential problem areas will also be reviewed. Metro will provide the consultant with EPA aerial photographs and historical information obtained through industrial non-point source investigations. Consultant will be responsible for researching additional information from EPA, DOE and others.

Output

Written report describing historical practices and locations of concern will be prepared.

2. Consultant will review the history of fill operations of the lower Duwamish from the Head of Navigation (River mile 6) to the mouth of the river including the construction of Harbor Island and the channelization of the river. Human developments on the lower river may have altered groundwater dynamics and quality.

Output

Written report compiling a history of dredging, fill and channelization activities in the lower Duwamish and an analysis of their effect on groundwater dynamics and quality.

3. Review and analyze existing groundwater data. At least eight groundwater studies have been undertaken. The results of these

and others should be synthesized into a report describing what is presently known about groundwater quality, quantity, dynamics, and sources of contamination in the lower Duwamish. Metro will provide consultant with results of groundwater studied at ChemPro, Boeing/Isaacson Steel, Chevron, West Seattle Bridge and Terminal 105, and Renton Effluent Transfer System. Consultant will obtain groundwater studies from Shell and Arco and other industries if available. Consultant will research any additional groundwater studies available for EPA (RCRA and other programs), DOE and other agencies, and other industries.

Output

Written report summarizing existing knowledge of Duwamish basin groundwater and identifying data gaps.

4. Based on Tasks 1, 2 and 3 develop a detailed groundwater monitoring and analyses strategy to fill the data gaps with recommendations for number sampling stations (wells, bank seepages, etc.) and their placement, parametric coverage, estimated cost and budget. The study will determine if groundwater is contributing to the pollution problems to the Duwamish. There will be alternatives for the proposed monitoring program requiring well placement on public rights-of-way or placement on private land if permission is granted or a combination of both.

Output

Three detailed monitoring strategies with different levels of effort to determine the relationship, if any, between groundwater and pollution of the Duwamish River. The study proposal will include budget, number and location of sampling stations and parametric coverage. The proposals should include the questions expected to be answered and a clear identification of the management decisions which can be made from each alternative.

5. Consultant will be available to defend the results of the analysis and the-proposed scope of work which will be presented to the Duwamish Industrial Council, community groups and others.

Consultant Selection Criteria

1.	Previous experience and ability to evaluate industrial waste disposal practies and impact on groundwater.	35 Points
2.	Knowledge of groundwater quality, quantity and dynamics of the Duwamish.	30 Points
3.	Demonstrated ability to synthesize existing data into comprehensive program and experience necessary to develop a groundwater monitoring strategy and budget.	35 Points

6/27/84

DUW 80036394
BVL